54. (Unamended) An antibody producing cell which produces the antibody or fragment thereof according to claim 53.

Please add the follow claims.

55. An isolated polynucleotide consisting of the nucleotide sequence set forth in SEQ ID No. 1, 2, 3, 4, 5, 10, 12, 13, or 15.

56. An isolated polynucleotide consisting of a nucleotide sequence which encodes a polypeptide having the amino acid sequence of SEQ ID No. 6, 7, 8, 9, 11 or 14.

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

Claims 34-37 and 40-52 have been amended, and new claims 55 and 56 have been added. The claim amendments and new claims have been presented to put the claims in better form, to more particularly define the present invention and to address each ground of rejection set forth by the Examiner. Support for the claim amendments and new claims is readily apparent from the teachings of the specification and the original claims.

Applicants wish to note that unless specifically recited in the arguments below, the changes to the claims are merely editorial in nature and should not be construed to narrow the scope of the claims. It should be noted that some changes have also been effected to broaden the scope of the claims. Applicants believe that the effect of the changes to the claims should be evident on its face and thus, require no further comment.

With regard to the rejection of claims 34-49 under 35 U.S.C. §112, first paragraph, this rejection is deemed to be untenable and is thus respectfully traversed.

Applicants have amended claims 34 and 35 to more particular define *that the claimed nucleotide sequence is derived from a CHD-gene of a bird or a part thereof, and that the polynucleotide hybridizes to the genomic DNA of a bird.* In other words, the claimed polynucleotides now clearly relate to CHD sequences and would hybridize to a bird's genomic DNA. Thus, the Examiner's concerns regarding which nucleotide sequence encoding the polypeptide having the amino acid sequence of SEQ ID No. 6, 7, 8, 9, 11 or 14 can be used in the present invention is unfounded since the claims do not encompass those polynucleotides which do not hybridize to the genomic DNA of a bird.

Further, with regard to claims 48 and 49 directed to a method of determining the sex of a non-ratite bird by hybridization, Applicants believe that the Examiner is incorrect in stating that the specification only teaches how to distinguish between CHD-1A and CHD-W by restriction digest. The use of antibodies as a method to detect specific proteins/polypeptides or peptides is well known to those skilled in the art. A method to detect the CHD-W polypeptide which utilizes antibodies was clearly envisaged by the inventors. Support for this embodiment can be found on

page 10, lines 15-26 and page 11, lines 3-20, of the specification. In addition, the specification also clearly indicates that methods other than restriction digest can be used to differentiate between the CHD-1A nucleic acid sequence and the CHD-W nucleic acid sequence. Support for such methods can be found on page 12, lines 15-28, page 13, lines 10-24, page 14, lines 1-16, page 20, lines 5-6, page 21, lines 8-15, page 25, lines 15-24, and page 26, lines 7-16, of the specification. In further support of the above, Applicants will be submitting references in the near future for the Examiner's review and consideration.

Thus, in view of the above, this rejection can no longer be sustained and should be withdrawn.

With regard to the rejection of claims 36-41 and 44-47 under 35 U.S.C. §112, second paragraph, this rejection is also deemed to be untenable and is thus respectfully traversed. Applicants have amended the claims to directed to a polynucleotide or fragment which gives "a specific signal **only on the W chromosome** upon hybridisation to genomic DNA of a non-ratite bird". Applicants believe that such an amendment should be sufficient to alleviate the Examiner's concerns and persuade the Examiner to withdrawn this rejection.

With regard to the rejection of claims 36-47 under 35 U.S.C. §102(b) as being anticipated by Delmas et al., this rejection is deemed to be untenable and is thus respectfully traversed.

To constitute anticipation of the claimed invention, a single prior art reference must disclose each and every material element of the claim. Here, in this case, the polynucleotide of Delmas et al. is clearly outside the scope of the claims. As argued previously, the phrase "moderate to high

stringency" is specifically defined on page 9, lines 13-15, of the specification as corresponding to about at least 75% homology. The Delmas et al. polynucleotide has only a 66.7% homology to SEQ ID No: 2, 44.1% homology to SEQ ID No: 3, 45.6% homology to SEQ ID No: 4, 45.1% homology to SEQ ID No: 5, 51.4% homology to SEQ ID No: 10 and 67.2% homology to SEQ ID No: 15, all of which falls well outside the scope of the claims (i.e. about at least 75% homology). Further, Delmas et al. do not at all teach ***fragments of its polynucleotide***. Lastly, Delmas et al. do not teach or suggest a polynucleotide comprising a nucleotide sequence derived from a CHD-gene of a bird or a part thereof and which hybridizes to the genomic DNA of a bird. The polynucleotide of Delmas et al. is a ***mouse cDNA*** and encodes a ***mouse CHD protein***.

Thus, Applicants submit that claims 36-47 are novel over the teachings of Delmas et al. and that the rejection under 35 U.S.C. §102(b) in view of Delmas et al should be withdrawn.

With regard to the rejection of claims 36-41 under 35 U.S.C. §102(b) as being anticipated by random hexameric nucleic acids, product C1181 in the 1990/1991 Promega Biological Research Products Catalog (page 138), this rejection is deemed to be untenable for the same reasons as noted above and is thus respectfully traversed. Like Delmas et al, the cited reference, 1990/1991 Promega Biological Research Products Catalog, does not teach or suggest at all that the claimed polynucleotide comprise a nucleotide sequence derived from a CHD-gene of a bird or a part thereof, and be hybridizable to the genomic DNA of a bird. Further, the cited reference also does not teach or suggest that fragments of the claimed polynucleotide give a specific signal ***only on the W chromosome*** upon hybridisation to the genomic DNA of a non-ratite bird. Thus, since

the cited reference fails to teach or suggest all the limitations of the claims, this rejection can no longer be sustained and should be withdrawn.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

In view of the foregoing amendments and remarks, it is respectfully submitted that the Application is now in condition for allowance. Such action is thus respectfully solicited.

If, however, the Examiner has any suggestions for expediting allowance of the application or believes that direct communication with Applicants' attorney will advance the prosecution of this case, the Examiner is invited to contact the undersigned at the telephone number below.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

34. (Amended) An isolated ~~nucleotide sequence~~polynucleotide comprising the nucleotide sequence ~~according to~~set forth in SEQ ID No. 1, 2, 3, 4, 5, 10, 12, 13, or 15, said nucleotide sequence being derived from a CHD-gene of a bird or a part thereof, said polynucleotide being hybridizable to the genomic DNA of a bird.

35. (Amended) An isolated polynucleotide comprising a nucleotide sequence which encodes a polypeptide ~~comprising~~having the amino acid sequence ~~according to~~of SEQ ID No. 6, 7, 8, 9, 11 or 14, said nucleotide sequence being derived from a CHD-gene of a bird or a part thereof, said polynucleotide being hybridizable to the genomic DNA of a bird.

36. (Amended) A fragment of the ~~nucleotide sequence~~polynucleotide according to claim 34 ~~and~~, which gives a ~~W chromosome~~ specific signal only on the W chromosome upon hybridisation to the genomic DNA of a non-ratite bird.

37. (Amended) A fragment of the ~~nucleotide sequence~~polynucleotide according to claim 35 ~~and~~, which gives a ~~W chromosome~~ specific signal only on the W chromosome upon hybridisation to the genomic DNA of a non-ratite bird.

38. (Unamended) The fragment according to claim 36, which is obtained by restriction endonuclease digestion.

39. (Unamended) The fragment according to claim 37, which is obtained by restriction endonuclease digestion.

40. (Amended) The fragment according to claim 36, wherein the non-ratite bird is selected from the group consisting of chicken, turkey, duck and parrot.

41. (Amended) The fragment according to claim 37, wherein the non-ratite bird is selected from the group consisting of chicken, turkey, duck and parrot.

42. (Amended) An isolated ~~nucleotide sequence~~polynucleotide which hybridises under moderate to high stringency conditions to the ~~nucleotide sequence~~polynucleotide according to claim 34.

43. (Amended) An isolated ~~nucleotide sequence~~polynucleotide which hybridises under moderate to high stringency conditions to the ~~nucleotide sequence~~polynucleotide according to claim 35.

44. (Amended) The ~~nucleotide sequence~~polynucleotide according to claim 42, which gives a ~~W chromosome~~ specific signal only on the W chromosome upon hybridisation to the genomic DNA of a non-ratite bird.

45. (Amended) The ~~nucleotide sequence~~polynucleotide according to claim 43, which gives

a ~~W chromosome~~ specific signal only on the W chromosome upon hybridisation to the genomic DNA of a non-ratite bird.

46. (Amended) The ~~fragment~~polynucleotide according to claim 44, wherein the non-ratite bird is selected from the group consisting of chicken, turkey, duck and parrot.

47. (Amended) The ~~fragment~~polynucleotide according to claim 45, wherein the non-ratite bird is selected from the group consisting of chicken, turkey, duck and parrot

48. (Amended) A method for determining the sex of a non-ratite bird or of an embryo, fetus, cell or tissue of a non-ratite bird, which comprises:

hybridising under moderate to high stringency conditions ~~a nucleic acid~~the polynucleotide according to claim 34 or 35 with either

(a) a DNA or RNA of the non-ratite bird, embryo, fetus, cell or tissue thereof or,

(b) a cDNA reverse transcribed from RNA of the non-ratite bird, embryo, fetus, cell or tissue thereof ~~of~~, or

(c) a cDNA or DNA amplified by cloning or polymerase chain reaction from DNA or RNA of the non-ratite bird, embryo, fetus, cell or tissue thereof, and

detecting the presence or absence of hybridisation of the ~~nucleic acid~~polynucleotide to (a), (b) or (c), which result is indicative of the sex of the non-ratite bird, embryo, fetus, cell or tissue thereof.

49. (Amended) A method for determining the sex of a non-ratite bird or of an embryo, fetus, cell or tissue of a non-ratite bird, which comprises:

hybridising under moderate to high stringency conditions ~~a nucleic acid~~the polynucleotide according to claim 42 or 43 with either

(a) a DNA or RNA of the non-ratite bird, embryo, fetus, cell or tissue thereof or,

(b) a cDNA reverse transcribed from RNA of the non-ratite bird, embryo, fetus, cell or tissue thereof ~~of~~, or

(c) a cDNA or DNA amplified by cloning or polymerase chain reaction from DNA or RNA of the non-ratite bird, embryo, fetus, cell or tissue thereof, and

detecting the presence or absence of hybridisation of the ~~nucleic acid~~polynucleotide to (a), (b) or (c), which result is indicative of the sex of the non-ratite bird, embryo, fetus, cell or tissue thereof.

50. (Amended) An avian CHD-protein, fragment thereof or a polypeptide ~~containing~~comprising a product of the CHD-gene or part thereof, or a CHD-mimetope protein, fragment thereof or a CHD-mimetope polypeptide which is derived or derivable from the ~~isolated nucleotide sequence~~polynucleotide of claim 34 or 35.

51. (Amended) A protein or fragment thereof or polypeptide ~~containing~~comprising a CHD-chromobox which is derived or derivable from the ~~isolated nucleotide sequence~~polynucleotide of claim 34 or claim 35, ~~including~~having at least one of the characteristic amino acid residues at position 11, 12, 20, 27 or 31 inside the chromobox of 3, 6, 8, 12-15 or 16 directly downstream of the chromobox when aligned to best effect to the sequences of SEQ ID

No. 22-30.

52. (Amended) A CHD-protein or fragment thereof or a polypeptide encoded by a nucleic acid or fragment or oligonucleotide according ~~of~~to the isolated ~~nucleotide sequence~~polynucleotide of claim 34 or 35, and ~~containing~~comprising a CHD-chromobox.

53. (Unamended) An antibody or fragment thereof which specifically binds to the avian CHD-protein of claim 50.

54. (Unamended) An antibody producing cell which produces the antibody or fragment thereof according to claim 53.